

A Contribution to the Knowledge of the Torymidae (Hymenoptera, Chalcidoidea) from South-Western Iran

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New data on distribution of 11 torymid wasp species (Hymenoptera, Chalcidoidea, Torymidae) from Fars province in South-Western Iran are provided. The genus *Eridontomerus* Crawford, 1907 and four species *Adontomerus nesterovi* Zerova, 1985, *E. biroi* Ruschka, 1923, *Monodontomerus rugulosus* Thomson, 1876 and *Podagrion gibbum* Bernard, 1938 are new records for Iran. Available data for each species and brief notes on host(s) and geographical distribution are also given.

Keywords: Torymidae, Hymenoptera, Iran, fauna, distribution.

The family Torymidae (Hymenoptera, Chalcidoidea) is distributed worldwide and contains two subfamilies with 67 genera and about 1100 extant species (Noyes, 2015). Torymidae have a large number of niches and feeding habits. Most species of Megastigminae are phytophagous (seed-feeders) with a few entomophagous species, whereas species of Toryminae are primarily entomophagous. Some Toryminae are known as ectoparasitoid of gall-forming insects, parasitoids of mantid egg-cases, larvae of solitary bees and hyperparasitoid of butterflies' pupae (Askew, 1965, 1966, 2006b; Grissell, 1995, 2005; Janšťa et al., 2013; Noyes, 2015).

The Iranian fauna of the Torymidae has been poorly studied. The first catalog of the Torymid wasp fauna of Iran was published by Peck (1963). Later, a few more species records of this family from Iran were added (e.g. Ebrahimi and Ahmadian, 2002; Lotfalizadeh and Gharali, 2005; Fallahzadeh et al., 2008; Stojanova and Ghahari, 2009) and a few new species described (e.g. Askew et al., 2006a; Zerova and Seryogina, 2008; Zerova et al., 2008). Fallahzadeh et al. (2009) provided a comprehensive check-list of the Iranian Torymidae consisting of 15 genera and 41 species of Torymidae. More recently, Madjzadeh et al. (2013) and Lotfalizadeh (2014) added some new records from Iran.

Here, we provide further data on Torymidae in South-West Iran, add one genus and three species to the published records.

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Materials and Methods

The specimens were collected using Malaise traps in different locations (i.e. Fasa, Kherameh and Larestan) in Fars province, Iran (Table 1). The voucher specimens are deposited in Department of Entomology, Jahrom Branch, Islamic Azad University, Jahrom, Iran (JIAU) and in Charles University in Prague, Czech Republic (CUPC). The taxonomy and distributional data were adapted from Graham and Gijswijt (1998), Grissell (1995) and Noyes (2015).

Table 1

List of the sampling localities in the Fars province of Iran

No.	Locality	Coordinates	Altitude (m)	Habitat
1	Kherameh	29°30'42"N, 53°18'55"E	1588	<i>Punica granatum</i>
2	Kherameh	29°30'51"N, 53°18'40"E	1588	<i>Punica granatum</i>
3	Larestan	27°13'N, 54°25'E	777	<i>Citrus aurantium</i>
4	Fasa	28°53'06"N, 53°40'36"E	1311	<i>Medicago sativa</i>
5	Fasa	28°54'29"N, 53°39'35"E	1343	<i>Punica granatum</i>
6	Fasa	28°54'21"N, 53°39'46"E	1366	<i>Citrus sinensis</i>
7	Fasa	28°54'47"N, 53°39'25"E	1348	<i>Punica granatum</i>

Results

The following species of Torymidae were collected and identified during this study:

Subfamily Toryminae Walker, 1833

Tribe Microdontomerini

Genus *Adontomerus* Nikol'skaya, 1955

Adontomerus nesterovi Zerova, 1985

Material examined: 1♂, Fars province, Fasa, 28°53'06"N, 53°40'36"E, 3.VI.2013, Malaise-trap in *Medicago sativa* L. field, leg. S. Azadi; 1♀, 27.VI.2013; 1♀, 30.VI.2013; 1♀, 9.VII.2013; 1♀, 11.VII.2013, same data; 1♀, Fasa, 28°54'21"N, 53°39'46"E, 22.VI.2013, Malaise-trap in *Citrus sinensis* (L.) garden, leg. S. Azadi; 1♀, 30.VI.2013; 1♀, 4.VII.2013; 1♀, 9.VII.2013, same data; 1♀, Fasa, 28°54'29"N, 53°39'35"E, 27.VI.2013, Malaise-trap in *Punica granatum* L. garden, leg. S. Azadi; 1♀, 4.VII.2013; 1♀, 5.VII.2013; 1♀, 10.VII.2013, same data; 1♀, Fasa, 28°54'47"N, 53°39'25"E, 4.VII.2013, *P. granatum* garden, leg. S. Azadi; 1♀, 17.VI.2013, same data.

Distribution: Turkmenistan, former USSR (Grissell, 1995; Noyes, 2015).

Comments: The genus *Adontomerus* comprises 11 described species (Noyes, 2015), and is an Old World genus (Grissell, 1995). *Adontomerus nesterovi* is a primary

parasitoid of *Paranthidiellum lituratum* (Panzer) (Hymenoptera, Apoidea, Megachilidae) (Zerova and Seregina, 1992).

Until now, the *Adontomerus* species recorded from Iran were *A. confusus* Askew, 2000, *A. crassipes* (Bouček, 1982) and *A. impolitus* (Askew and Nieves Aldrey, 1988) (Fallahzadeh et al., 2009). In the present study, *A. nesterovi* is a new species record for Iran.

Genus *Eridontomerus* Crawford, 1907

Eridontomerus biroi Ruschka, 1923

Material examined: 2♀, Fars province, Fasa, 28°54'47"N, 53°39'25"E, 7.VI.2013, Malaise-trap in *Punica granatum* L. garden, leg. S. Azadi.

Distribution: Czech Republic, Hungary, Kazakhstan, Moldova, Romania, Slovakia (Grissell, 1995; Zerova and Seryogina, 1999; Noyes, 2015).

Comments: *Eridontomerus* is an Old World genus containing 12 species with one species which has apparently been introduced into the Nearctic region (Peck, 1963). Species of this genus appear to be parasitoids of gall-inducing Eurytomidae (Hymenoptera) and Cecidomyiidae (Diptera) in grass stems (Poaceae) (Noyes, 2015).

Zerova and Seryogina (1999) reared *E. biroi* from *Tetramesa linearis* (Walker) (Eurytomidae) from stems of *Elytrigia* sp., *Calamagrostis* sp., *Elymus junceus* Fisch. and *Elymus angustatum* Bieb. This parasitoid represents a new genus and species record for Iran.

Genus *Idiomacromerus* Crawford, 1914

Idiomacromerus cf. *korneyevi* Zerova and Seryogina, 2001

Material examined: 1♀, Fars province, Fasa, 28°54'29"N, 53°39'35"E, 30.IV.2013, Malaise-trap in *Punica granatum* L. garden, leg. S. Azadi; 1♀, Fasa, 28°54'47"N, 53°39'25"E, 7.VI.2013, Malaise-trap in *P. granatum* garden, leg. S. Azadi; 1♀, Kherameh, 29°30'51"N, 53°18'40"E, 12.VI.2013, Malaise-trap in *P. granatum* garden, leg. E. Izadi; 1♀, Kherameh, 29°30'42"N, 53°18'55"E, 15.VI.2013, Malaise-trap in *P. granatum* garden, leg. E. Izadi.

Comments: The genus *Idiomacromerus* contains 44 species and is well represented in the Holarctic region from where more than half the known species have been recorded (Noyes, 2015). Species of the genus has been reared from various gall-forming and seed-feeding insects (Grissell, 1995; Noyes, 2015). Zerova and Seregina (2001) reported *I. korneyevi* in association with *Nitraria schoberi* (Zygophyllaceae).

Genus *Microdontomerus* Crawford, 1907

Microdontomerus annulatus (Spinola, 1808)

Material examined: 1♀, Fars province, Fasa, 28°54'29"N, 53°39'35"E, 10.IV.2013, Malaise-trap in *Punica granatum* L. garden, leg. S. Azadi; 1♀, 20.IV.2013, same data; 1♀, Fasa, 28°54'47"N, 53°39'25"E, 18.IV.2013, Malaise-trap in *P. granatum* garden, leg. S. Azadi; 1♀, 30.V.2013, same data; 1♀, Fasa, 28°53'06"N, 53°40'36"E, 20.V.2013, Malaise-trap in *Medicago sativa* L. field, leg. S. Azadi.

Iranian records: Ilam province (Gharali, 2004; Lotfalizadeh and Gharali, 2005), Tehran province (Modares Awal, 1997), Ghom province (Keyhanian, 2008), Guilan and Mazandaran provinces (Stojanova and Ghahari, 2009), Kurdistan province (Nazemi Rafie and Lotfalizadeh, 2012), Kerman province (Madjdzadeh et al., 2013).

Distribution: Austria, Croatia, Czech Republic, Egypt, England, France, Germany, Hungary, Iran, Italy, Libya, Moldova, Montenegro, Pakistan, Romania, Serbia, Slovakia, Spain, Sweden, Transcaucasus, Turkey (Noyes, 2015).

Comments: The genus *Microdontomerus* comprises 24 species and appears to be particularly well represented in the New World from where 19 species have been recorded (Grissell, 2005). Several species of the genus have been reared from various gall-forming insect and some species are parasitoids of a wide range of insects in all life-stages (Grissell, 2005; Noyes, 2015). In Iran, it has been reared from *Acanthiophilus helianthi* Rossi (Diptera, Tephritidae) on safflower *Carthamus tinctorius* and *C. lanatus* (Lotfalizadeh and Gharali, 2014).

Tribe Monodontomerini
Genus *Monodontomerus* Westwood, 1833

***Monodontomerus obscurus* Westwood, 1833**

Material examined: 1♀, Fars province, Fasa, 28°54'21"N, 53°39'46"E, 26.IV.2013, Malaise-trap in *Citrus sinensis* (L.) garden, leg. S. Azadi.

Iranian records: Ardabil province (Lotfalizadeh and Gharali, 2005), Fars, Hamadan, Isfahan, Khorasan Shomali, Khorasan Jonobi, Mazandaran provinces (Stojanova and Ghahari, 2009), Kurdistan province (Nazemi Rafie and Lotfalizadeh, 2012), Kerman province (Madjdzadeh et al., 2013).

Distribution: Azores, Bulgaria, Canada, Chile, Croatia, Czech Republic, Denmark, Egypt, France, Germany, Hungary, India, Israel, Italy, Kazakhstan, Lebanon, Moldova, the Netherlands, Pakistan, Republic of Macedonia, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Turkey, Turkmenistan, Ukraine, United Kingdom, United States of America (Noyes, 2015).

Comments: The genus *Monodontomerus* contains 45 species and is widespread thought in the Holarctic region (Grissell, 1995; Noyes, 2015). Zerova and Seryogina (2002) revised of old world *Monodontomerus* species.

Some species of the genus are parasitoids of several families of Diptera, Hymenoptera and Lepidoptera and other develop in the cell of solitary bees and wasps (Narendran, 1994; Grissell, 1995). In the Palearctic region, some species Megachilidae, Vespidae, Sphecidae and Anthophoridae have been recorded as host for *M. obscurus* (Noyes, 2015).

***Monodontomerus rugulosus* Thomson, 1876**

Material examined: 1♀, Fars province, Fasa, 28°54'47"N, 53°39'25"E, 9.VII.2013, Malaise-trap in *Punica granatum* garden, leg. S. Azadi

Distribution: Armenia, Austria, Caucasus, Colombia, Czech Republic, France, Moldova, the Netherlands, Slovakia, Sweden, United Kingdom, former USSR (Noyes, 2015).

Comments: Up to now, the *Monodontomerus* species recorded from Iran were *M. aeneus* (Fonscolombe, 1832), *M. aereus* Walker, 1834, *M. obscurus* Westwood, 1833 and *M. vicicellae* (Walker, 1847) (Fallahzadeh et al., 2009). In the present study, *M. rugulosus* is a new species record for Iran.

Genus *Oopristus* Steffan, 1968

Oopristus turkestanicus (Skriptshinsky, 1929)

Material examined: 1♂, Fars province, Fasa, 28°54'29"N, 53°39'35"E, 4.VI.2013, Malaise-trap in *Punica granatum* L. garden, leg. S. Azadi.

Iranian records: Tehran province (Steffan, 1968), Iran (Farooqi, 1986).

Distribution: Iran, Iraq, Pakistan, Turkey, Uzbekistan (Noyes, 2015).

Comments: The genus *Oopristus* contains three described species with area of distribution restricted to Iran, Iraq, Pakistan and Uzbekistan (only *O. turkestanicus*; Bouček, 1978; Grissell, 1995; Noyes, 2015), Turkey (all three species; Tarla et al., 2010). *Oopristus turkestanicus* is an egg parasitoid of *Apodiphus amygdali* (Germar, 1817) and *Sarju eremica* (Hoberlandt, 1959) (Hemiptera: Pentatomidae) on various trees (Grissell, 1995; Tarla et al., 2010; Noyes, 2015).

Tribe Podagrionini

Genus *Podagrion* Spinola, 1811

Podagrion gibbum Bernard, 1938

Material examined: 1♀, Fars province, Larestan, 27°13'N, 54°25'E, 4.IX.2012, Malaise-trap in orange garden, leg. A. Falahatpishe.

Distribution: France, Greece, Romania, Spain (Noyes, 2015).

Comments: The torymid genus *Podagrion* is a moderately large and cosmopolitan genus of Podagrionini that currently consists of over 100 nominal species (Grissell, 1995; Noyes, 2015). In the Palearctic region, only 11 species and 3 subspecies of this genus have been recorded (Grissell, 1995; Noyes, 2015). Delvare (2005) revised and keyed out all species of *Podagrion* from West-Palearctic region.

All species of *Podagrion* are parasitic on mantis egg cases (Narendran, 1994). *P. gibbum* were reared on egg case of *Ameles decolor* (Charpentier, 1825), *A. spallanzania* (Rossi, 1792), *Iris oratoria* (L., 1758) and *Mantis religiosa* (L., 1758) (Delvare, 2005; Noyes, 2015). In the current study, *P. gibbum* is a new species record for Asia and Iran.

Genus *Podagrionella* Girault, 1914

Podagrionella lichtensteini (Picard, 1933)

Material examined: 1♀, Fars province, Fasa, 28°54'21"N, 53°39'46"E, 10.IV.2013, Malaise-trap in *Citrus sinensis* (L.) garden, leg. S. Azadi; 1♀, 20.IV.2013, same data; 1♀, 28.IV.2013, same data; 1♀, 17.V.2013, same data; 1♀, 19.V.2013, same data; 2♀, 3.VI.2013, same data; 2♀, Fasa, 28°54'29"N, 53°39'35"E, 20.IV.2013, Malaise-trap in *Punica gra-*

natum L. garden, leg. S. Azadi; 2♀, 30.V.2013, same data; 1♀, Fars province, Fasa, 28°53'06"N, 53°40'36"E, 15.IV.2013, Malaise-trap in *Medicago sativa* L. field, leg. S. Azadi; 1♀, 20.V.2013, same data; 1♀, Kherameh, 29°30'51"N, 53°18'40"E, 2.V.2013, Malaise-trap in *P. granatum* garden, leg. E. Izadi; 2♀, 18.V.2013, same data; 1♀, 29.V.2013, same data; 1♀, 31.V.2013, same data; 1♀, Kherameh, 29°30'51"N, 53°18'40"E, 27.V.2013, Malaise-trap in *P. granatum* garden, leg. E. Izadi.

Iranian records: East Azerbaijan province (Lotfalizadeh and Gharali, 2005), Kurdistan province (Nazemi Rafie and Lotfalizadeh, 2012).

Distribution: Canary Islands, France, Kazakhstan, Spain (Noyes, 2015).

Comments: Doganlar and Doganlar (2009) reviewed and keyed out *Podagrionella* species from Palearctic region and described two new species from Turkey. Alongside *Podagrion*, species of the genus *Podagrionella* are parasitic on mantis egg case (Grissell, 1995; Noyes, 2015). *Podagrionella lichtensteini* has been reported before as egg parasitoid of *Iris oratoria* (L., 1758) (Mantidae) (Grissell, 1995; Noyes, 2015).

Tribe Torymoidini

Genus *Torymoides* Walker, 1871

Torymoides kiesenwetteri (Mayr, 1874)

Material examined: 1♀, Fars province, Fasa, 28°53'06"N, 53°40'36"E, 13.VI.2013, Malaise-trap in *Medicago sativa* L. field, leg. S. Azadi.

Iranian records: Mazandaran province (Stojanova and Ghahari, 2009), Kerman province (Madjdzadeh et al., 2013).

Distribution: Andorra, Bulgaria, Canary Islands, China, Croatia, Czech Republic, Egypt, France, Germany, Greece, Hungary, India, Italy, Macedonia, Madeira, Moldova, Nepal, Poland, Romania, Slovakia, Spain, Switzerland, Turkey, UK, Serbia, former Yugoslavia, Yemen – Socotra island (Janšta, 2012; Noyes, 2015).

Comments: *Torymoides* is a cosmopolitan genus contains over 56 described species (Noyes, 2015). The majority of *Torymoides* species appears to be associated with galls of Cecidomyiidae and Tephritidae (both Diptera) found on grass or trees (Grissell, 1995; Noyes, 2015). *Torymoides kiesenwetteri* has been reared from galls of one cecidomyiid species and over 15 fruit flies species (Noyes, 2015).

Tribe Torymini

Genus *Torymus* Dalman, 1820

Torymus cupreus (Spinola, 1808)

Material examined: 1♀, Fars province, Fasa, 28°53'06"N, 53°40'36"E, 24.V.2013, Malaise-trap in *Medicago sativa* L. field, leg. S. Azadi.

Iranian records: East Azarbaijan and Ghazvin provinces (Lotfalizadeh and Gharali, 2012; Lotfalizadeh, 2014).

Distribution: Austria, Burma, Caucasus, Croatia, Czech Republic, Denmark, Israel, Italy, Moldova, Montenegro, the Netherlands, Russia, Slovakia, Ukraine (Grissell, 1995; Noyes, 2015).

Comments: *Torymus* is a worldwide, large genus contains about 412 described species (Noyes, 2015) with several phytophagous and many parasitoid species on a wide range of different insect life-stages (Grissell, 1995; Noyes, 2015).

Discussion

Altogether 11 species are listed with one genus and four species of Torymidae were reported for the first time from Iran. The result of this research and also that of many other researches, which were conducted on the fauna of Iranian Chalcidoidea, indicate that the fauna of Iranian Torymidae is rich and diverse that has not yet been thoroughly studied and needs more extensive investigation. In the present study Malaise trap were used for collecting torymid wasps, therefore their biology and host associations remain unknown. So, further study of their occurrence, distribution, biology, behavior and especially host specificity, should be supported.

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